hrs. The milk level curve was similar to that recorded in the first experiment, with a high of 0.53 unit at 15 hrs and 0.1 unit at 30 hrs.

The results obtained in these experiments indicate that in the dairy cow, where there is rapid excretion of a drug, measurable amounts of that drug in the milk are not likely to be found unless blood concentrations are high and persistent. The actual drug concentration in the milk may not have great significance, but it indicates that the drug is present in the secreting tissues. The total dosage of an antibiotic or a sulfonamide used during the course of treatment is relatively unimportant. However, the dose-time-weight relationship is important.

The purpose of this report is not to suggest the parenteral administration of penicillin for the treatment of mastitis. Penicillin can be localized in the udder by intramammary infusions without as rapid loss as when the drug is administered parenterally, and higher concentrations can be achieved on smaller dosage and less frequent administration. It is interesting to note, however, that there is diffusion of penicillin from blood to milk.

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Variations in Total Counts of P32 and I131 for Dishes of Different Atomic Number[1]

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In the measurement of radioactive isotopes in the laboratories throughout the country one finds variations as great as 50%. Some of the discrepancy may be due to the different materials of which the dishes used to measure the radiation are made. With this point in mind, the amount of radiation reflected from various materials was measured from given amounts of P32 and I131.

Radioactive phosphorus emitting beta rays with a maximum energy of 1.7 Mev was evaporated to dryness

on filter paper, Al, Cu, Sn, and Pb dishes, the amount of radioactive material being contained within a circle of about 1 cm in diameter. Measurements were made at a distance of 10 cm with a Geiger counter tube, the glass wall of which was 0.12 mm thick. The percentage reflection using paper as zero reflector increased with the atomic number of the various materials. Percentage reflection is defined as

$$100 \times \frac{I - I_0}{I_0},$$

where I = intensity in counts per minute of the primary beam and the reflected beam, and I_0 = intensity of the primary beam.
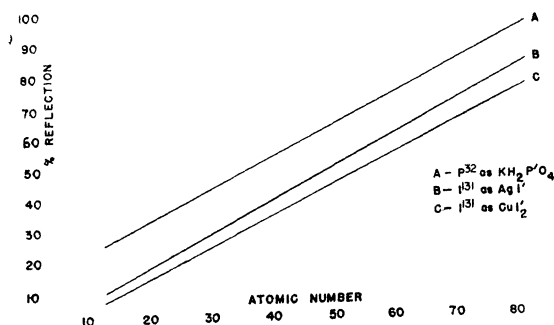

FIG. 1

Fig. 1 is a plot of the atomic number of the reflecting materials vs. percentage reflection. Measurements taken at 15 and 20 cm from the tube gave the same percentage reflection. Similar data at 10 cm from the tube were taken in a lead house, and the reflection ratios were the same as those in air.

Identical technique was followed for I131, which emits beta rays with a maximum energy of 0.7 Mev and gamma rays with a maximum energy of 0.4 Mev.

Since I131 sublimes and is difficult to handle, it was first bound as silver iodide by the use of $NaHSO_3$ and $AgNO_3$. Other samples were bound as cupric iodide by the use of $NaHSO_3$ and cupric acetate. Measurements of these two salts showed a variation of only about 6% and suggest that I131 may be measured in either form, since there is no appreciable scatter from the copper or silver atoms or from the residual nonradioactive salts.

The data obtained by the use of AgI and CuI_2 in dishes of different materials are also presented in Fig. 1. Both of these plots fall below that for P32, which fact is in reasonable agreement with the data published by Zumwalt (1).

The results obtained from these experiments show that the percentage reflection from the various dishes bears linear relation to the atomic number of the reflecting material when filter paper is used as a nonreflecting material. From this work it may be concluded that the amount of radioactivity as reported will vary considerably according to the type of dish used.

Reference

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